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John A. Baltes

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The Chief of Naval Operations (CNO) has called for the development of a new Maritime Strategy. Critical to this new strategy is the need for robust Anti-Submarine Warfare (ASW) capabilities across the entire ASW spectrum. Without such capabilities, the U.S. Navy will not be able to meet its current or future global challenges. Possessing technologically advanced ASW capabilities and having well trained professionals will ensure that the Navy has the continued ability to provide global access to U.S. joint and allied fighting forces anywhere in the world.

An analysis of past maritime strategies with their ASW components, will reveal some common threads; dominance of the seas, ensuring global freedom of access to the seas, and the ability to project power from those seas. The requirement to control the seas and ensure access to them will not change. The Navy's past maritime strategies have always promoted this concept. Anti-Submarine Warfare should play a major role in our new Maritime Strategy in order to maintain these capabilities.

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Anti-Submarine Warfare: What is its Role in the New Maritime Strategy?

By

John A. Baltes
Lieutenant Commander, U.S. Navy

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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23 October 2006

ABSTRACT

The Chief of Naval Operations (CNO) has called for the development of a new Maritime Strategy. Critical to this new strategy is the need for robust Anti-Submarine Warfare (ASW) capabilities across the entire ASW spectrum. Without such capabilities, the U.S. Navy will not be able to meet its current or future global challenges. Possessing technologically advanced ASW capabilities and having well trained professionals will ensure that the Navy has the continued ability to provide global access to U.S. joint and allied fighting forces anywhere in the world.

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INTRODUCTION

> Without mastery of the sea -- without Sea Power -- we cannot protect trade, we cannot help those in peril, we cannot provide relief from natural disaster, and we cannot intercede when whole societies are torn asunder by slavery, weapons of mass destruction, drugs, and piracy. Without sea power we cannot hope -- the world cannot hope -- to achieve what President Bush has called 'a balance of power that favors freedom.
>
> Admiral Mullen, *Address to the Naval War College 31 August 2005*

The Chief of Naval Operations (CNO) has called for the development of a new Maritime Strategy. He stated that, "The old Maritime Strategy focused on sea control, but I have told my country that our new one must recognize that the economic tide of all nations rises not when the seas are controlled by one, but rather, when they are made safe and free for all."[1] Critical to this new strategy is the need for robust Anti-Submarine Warfare (ASW) capabilities across the entire ASW spectrum. At the simplest level, ASW is the branch of naval warfare that utilizes surface warships, aircraft, helicopters, submarines, and their sensors and weapons to find, localize, track, identify, and then if required, attack an enemy submarine. Without such capabilities, the U.S. Navy will not be able to meet its current or future global challenges. A robust ASW force will ensure that the Navy can continue to provide global access to U.S. joint and allied fighting forces anywhere in the world.

A highly trained, well equipped, and professional ASW force has been the cornerstone of past maritime strategies. These strategies have ensured unfettered access to the world's oceans, seas, littoral regions, and choke points. Anti-Submarine Warfare must play a major role in the new U.S. Maritime Strategy. The importance of continuing this capability, in order to meet future challenges, cannot be understated.

An analysis of past maritime strategies reveals common threads; the dominance of the seas, ensuring freedom of access to the seas, and the ability to project power from those seas. History has shown that the ability to dominate the seas and project power from them has been

accomplished through the use of naval forces, the Marine Corps, and from the efforts of a variety of joint forces with their combined fighting capabilities. The requirement to control the seas and ensure access to them, as well as secure access for American allies will not change. Past U.S. maritime strategies have always maintained this concept and so should the future maritime strategy.

THE PROGRESSION OF U.S. MARITIME STRATEGY

Anti-Submarine Warfare has been an important facet of naval warfare since the First World War. The earliest submarines were slow, dangerous to operate, lacked reliable weapons, and were considered crude even by the standards of the day. Despite these challenges, the Germans were able to effectively conduct unrestricted submarine warfare against shipping in the vicinity of the United Kingdom in 1917.[2] The submarines that were used at the beginning of the Second World War did not differ greatly from those used in 1918, but a variety of offensive and defensive tactics were developed during WWII that increased the submarine's utility.[3] The Germans attacked ships from surfaced submarines at night, while the creation of convoys attempted to provide a defense against such attacks. Eventually, the advent of radar forced submarines to submerge in order to avoid more capable ships, aircraft, and weapons.

During the post WWII era, the U.S began a massive buildup of submarines and submarine related technology. In 1955, USS *Nautilus*, the world's first nuclear-powered submarine was commissioned.[4] For the remainder of the 1960s and 1970s, the U.S. Navy dealt primarily with Soviet SSBNs (Nuclear-powered ballistic missile-firing submarine).

In January 1977, Graham Clayton Jr. became the Secretary of the Navy. Dissatisfied with the naval portion of the Presidential Review Memorandum, he ordered that a

comprehensive study be conducted on linking policy objectives with warfighting capabilities.[5] The study was called Sea Plan 2000 and it examined the most probable range of tasks for the Navy and Marine Corps as well how well those tasks could be performed within certain funding guidelines.[6] The study attempted to align the Navy's force structure with the strategic objectives of the United States.

The Navy began to formalize the concept of a maritime strategy in 1984 with a publication entitled "The Maritime Strategy."[7] The genesis of this document stemmed from the need to align the Program Objective Memorandum (POM), a budgeting tool, to the stated national and military strategies. The POM was a line-by-line list of every appropriation item that the Navy desired for the upcoming five year period.[8] By design, it was supposed to support the national military strategy, and not vice versa. However, this was not the case in 1984. The POM attempted to tie multiple capabilities together into a single document that would serve as the basis for the Navy's budget. Therefore, the Navy needed a clear strategy to help define its requirements.

The Navy's ensuing strategy relied on the concept of global forward deterrence. The strategy focused on keeping the Soviet Union's maritime forces contained. Deterrence necessitated that the Navy apply pressure in every location that the Soviet Union valued.[9] The Navy's strategy relied heavily on a submarine force that was well suited to protect vital sea lines of communication (SLOCs) in the Pacific and Atlantic Fleet area of responsibility (AOR), as well as conducting anti-ballistic missile submarine patrols.

According to Rear Admiral Clyde R. Bell, the director of the Force Level Plans Division within the Office of the CNO, "Our anti-SSBN capability is the highest leverage item in the entire naval strategy for global war against the Soviets. Our ability to conduct

offensive ASW/ASUW [Anti-Submarine Warfare / Anti-Surface Warfare] in Soviet position areas should be a centerpiece," of the new Maritime Strategy.[10] On 04 May 1984, Admiral James D. Watkins, the CNO, signed the final version of the Navy's new Maritime Strategy.

The strategy was based on a concept of blue water operations and a war at sea mentality. It assumed that if hostilities broke out between the United States and the Soviets, those hostilities would occur in the blue waters of the deep oceans, far from each other's homeland. Engagements would occur at sea as opposed to being fought in the littoral regions. The strategy relied heavily on the Navy's Anti-Submarine Warfare capabilities. Not only was there a requirement to contain the Soviet nuclear submarine threat, but there was a need to ensure that the United States had access to the world's oceans, seas, straits, and waterways. To accomplish this, the Navy needed a robust, modern, and capable ASW fleet comprised of aircraft, surface combatants, and submarines.

Admiral Carlisle Trost relieved Admiral Watkins as CNO on 01 July 1986. In a speech delivered at the Leningrad Naval School on 12 October 1989, he stated that the United States was a nation that relied on the sea for its economic and political livelihood. The Soviet Union was the only nation in the entire world that had the capability to challenge and possibly destroy the U.S. way of life. Trost explained that, "the maritime strategy was a concept…of operations for the effective global employment of naval forces to protect the interests of the United States and our allies and [to] support our national policy objectives."[11] Trost's strategy was based on three fundamental tenets: deterrence, a network of alliances, and the premise of forward deployment. The first and third tenets of the CNO's strategy necessitated a strong ASW presence and capability.

Deterrence ensured that the economic and political interests of the United States would not be undermined. To accomplish the tenet of deterrence, U.S. naval forces needed a flexible and powerful fleet that was capable of conducting independent operations far from home bases. The Navy had to be able to respond to a variety of threats across the entire spectrum of conflict. At the heart of this capability was the Navy's ability to conduct integrated ASW operations using a wide variety of air, surface and subsurface platforms and sensors.

Admiral Trost believed that the Carrier Battle Group (CVBG) was the backbone of the United States Navy.[12] The CVBG needed to be protected, which could be best accomplished through a concept of defense in depth. The defense was comprised of a variety of multi-mission surface combatants, submarines, and aircraft. Operating in concert they provided a layered defense in depth of the air, surface, and water space surrounding a carrier, or high value unit (HVU). When deployed with logistics ships, the CVBG provided the United States with a highly mobile and extremely flexible base from which it could protect mutual interests and deter aggression. Without the ASW portion of the defense in depth strategy, the backbone of the U.S. Navy could be rendered ineffective or destroyed. Therefore, without a defensive ASW capability for CVBG protection, the Navy could not accomplish its missions.

As time progressed, the Navy realized that it needed to align its Maritime Strategy with the rapidly changing international environment. The Cold War came to an end and senior naval leadership struggled to identify the U.S. Navy's objectives and missions.[13] The direct threat of Soviet aggression had dissipated, but there was still a need to defend strategic interests using maritime assets. A new strategy evolved to deal with the multitude of rising

threats. It was promulgated by Admiral Jeremy Boorda in 1992. The strategy was called "From the Sea," and it was further refined in 1994 with the publishing of "Forward…From the Sea."[14]

"Forward…From the Sea" provided the basis for how the Navy and Marine Corps would conduct expeditionary operations in support of the National Military Strategy (NMS). The new strategy combined the Navy's power projection capabilities with the Marine Corp's expeditionary agile, flexible, and lethal warfighting capabilities. The primary purpose of forward-deployed naval forces was to project American power from the sea in order to influence events in the littoral regions of the world. Previously the Navy conducted operations on the open oceans and in deep water, away from the littorals. "Forward…From the Sea" was a different strategy that sought to define how the Navy and Marine Corps would conduct joint littoral operations. Because seventy-five percent of the Earth's population, a similar percentage of national capitals, and numerous commercial centers lie within the littorals, these areas are of strategic importance to the United States.[15] Maintaining access to them is considered critical.

As CNO, Admiral Jay Johnson further honed the Navy's maritime strategy in early 1997. His vision for the Navy's strategy contained four guiding principals: operational primacy, leadership, teamwork, and pride. The concept of operational primacy required state of the art, capable ASW forces. Admiral Johnson believed that the Navy should have the ability to swiftly and effectively carry out any naval, joint, or coalition mission, and that the United States should decisively prevail over any foe.[16] Admiral Johnson elaborated on *how* the U.S. Navy would operate across the three components of the NMS: Peacetime Engagement, Deterrence and Conflict Prevention, and Fight and Win.

The Navy's contributions to the NMS came from the ability to operate on, under, above, and from the sea according to the CNO.[17] The Navy's ability to operate and project power from international waters allowed all three components of the NMS to be executed without infringing upon a nation's sovereignty. Admiral Johnson knew that the ability to deliver a wide range of firepower and the generation of high aircraft sortie rates would have a major impact on the course and outcome of any conflict.[18] Submarines operating covertly in littoral waters could deliver additional fires or special operations forces (SOF) where least expected by an enemy. Such offensive operations could place enemy centers of gravity at risk and allow the United States to seize the strategic advantage.

In 2002, CNO Admiral Vern Clark laid out his vision for the future of the Navy's maritime strategy. Entitled "Sea Power 21", it was comprised of three fundamental concepts: Sea Shield, Sea Strike, and Sea Basing. These concepts sought to expand on the Navy's progression from the blue-water, war-at-sea focus of the "Maritime Strategy", through the littoral emphasis of "From the Sea" and "Forward…From the Sea" to a wider strategy in which U.S. naval forces could fully participate in global joint operations against regional and transnational dangers.[19]

Sea Strike was the ability to project precise and persistent power from the sea. Sea Shield would enable U.S. naval forces to extend defensive assurance to our allies throughout the world. Sea Basing would enhance operational independence and support the joint forces. This new strategy provided the President with numerous, widely dispersed combat power platforms, each possessing unprecedented warfighting capabilities.[20] Carrier strike groups continued to be at the core of the Navy's warfighting capabilities because of their sustained power projection ability, extended situational awareness, and combat survivability. A major

factor in that combat survivability was a viable ASW defense. Without a robust ASW defense, an aircraft carrier was subject to attack from enemy submarines. An attack and subsequent sinking of a carrier would have unprecedented tactical, operational, and strategic implications for the United States. Sea Power 21 would ensure that the U.S. Navy was always in a position to counter unexpected threats that might arise from anywhere in the world, well into the 21st century.

The current CNO, Admiral Michael Mullen stated**,** "Sea Power 21 provides a great architecture, a terrific vision, but I fear we've let it wander into a debate over what we buy and how much we spend. It's become too programmatic. That needs to change."[21] In his CNO Guidance for 2006, he acknowledged, "Harnessing sea power in the 21st century will demand much more of us than simply putting ordnance on target…it will demand highly sophisticated networks…stealth...and it will demand that we build…a new fleet of ships, aircraft and submarines to wield that power across the spectrum of conflict."[22] Admiral Mullen clearly appreciates the importance of a modern, updated, fully capable U.S. Navy Fleet. ASW is critical to how the Navy operates. It enables the United States to conduct combat operations from carrier "bases" utilizing forward deployed troops and combat power. The United States will jeopardize the ability to meet current and future threats if the Navy's ASW capabilities are neglected.

EMERGING AND PROLIFERATED TECHNOLOGIES

Countries around the world, both friendly and hostile to the United States, continue to advance and export ASW capabilities. More than forty countries including Russia, China, North Korea, India, Pakistan, Indonesia, and Iran have navies that operate diesel-electric submarines (SSKs). SSKs in operation today have significantly greater capabilities then

what they had only a few years ago. Technological advances in the use of air-independent propulsion (AIP) technology, passive and active noise-reduction techniques, improved sensors and weapons, and advanced hull designs have greatly improved those capabilities. Advanced hull designs allow greater diving depths and higher underwater speeds while battery improvements and advances in AIP technology have greatly increased a submarine's underwater endurance and stealth. These recent advances in technology have significantly reduced the likelihood of detection.

SSKs are more likely to be encountered in the littoral regions of the world than in the deep oceans. Since background noise levels in a littoral environment are considerably higher than those found in the open ocean, an AIP submarine will be significantly harder to detect in the littorals. The characteristics of sound propagation in the littorals are vastly different than those found in the deeper waters of the ocean. Bottom composition plays a much larger role in sound propagation, transmission loss, target strength, and noise levels in the littorals. All these factors combine to make the littorals a very difficult environment to acoustically detect any submarines.

There have also been significant developments in weapon systems technology for submarines over the past few years. Most SSKs can now launch anti-ship cruise missiles (ASCMs) while remaining submerged. The recent developments in AIP technologies coupled with weapon systems advancement has made submarines operating in the littorals a major threat. Submarines will also continue to pose a threat when operating in costal waters, maritime straits, and in a variety of key choke points around the world. The U.S. Navy's success at defending against and defeating SSKs in the littorals requires an investment in ASW research, technologies, and training.

Although AIP technology has existed since World War II, the Royal Swedish Navy (RSN) was the first country to employ the technology in its operational submarines by using a Stirling cycle engine. Currently, three of its A-19 Gotland-class submarines utilize the Stirling AIP engine.[23] Sweden has already licensed its AIP technology to Japan. The Royal Australian Navy is also interested in acquiring the technology for its submarines.[24] The German Navy plans to equip its next generation 212 and 214-class submarines with AIP technology, while Italy plans to build two submarines based on the German's 212-class submarine. Pakistan is currently acquiring three Agosta 90B submarines from France that will be fitted with the MESMA (Module d'Energie Sous-Marine Autonome) AIP system. The Russians have equipped some of their export Project 877 Kilo class submarines with advanced AIP technology. [25] Iran's three Russian built Project 877 Kilos could also be updated with AIP technology.

Iran, a country which continues to be hostile towards the United States, has expressed its intent to control access to the Strait of Hormuz and the Persian Gulf. Iranian Kilo class submarines have the ability to conduct mining operations, deploy special operations forces, and conduct anti-surface and anti-submarine warfare. Since the U.S. Navy continues to operate in the Strait of Hormuz and Persian Gulf, the United States has a vested interest in being able to defend against Iranian capabilities and threats.

North Korea has been overtly hostile towards the United States and South Korea. North Korea possesses the ability to deploy special operations forces from their submarines, while also maintaining an anti-surface warfare capability. China's submarine fleet can threaten Taiwan and the freedom of navigation through key strategic chokepoints in the East

and South China Seas. The U.S. Navy must retain the ability to defeat North Korean and Chinese submarines in order to contain threats from both countries.

Prudence dictates that the United States remains at the forefront of emerging threats, the proliferation of ASW technologies, and increasing enemy submarine capabilities. Accordingly, the Navy must continue to devote substantial efforts towards maintaining ASW capabilities and technologies. Anti-submarine warfare will enable the U.S to defeat enemies, maintain sea control, and ensure freedom of navigation for the Navy, American allies, and commercial shipping around the world. The current CNO has stated, “We can't stop investing in high-end capabilities. We must stay ready for major combat operations against any strategic competitor. We cannot walk away from missions like Anti-Submarine Warfare."[26]

COMBATING EMERGING TECHNOLOGIES

The key to Anti-Submarine Warfare success relies on more than just acquiring new technologies and platforms. Rather, it is the integration of those new technologies coupled with a thorough understanding of ASW concepts, doctrine, tactics, and procedures that will ultimately create success. New and expensive capabilities alone will not guarantee ASW dominance in the years to come. Practitioners of ASW must continue to study their craft, strive to understand their enemy’s tactics, and be open to new ideas and concepts.

To help combat the proliferation of advancing ASW technologies utilized by hostile countries such Iran, North Korea, and China, the United States has invested in a variety of new ASW technologies. The technologies include ships, aircraft, helicopters, submarines, unmanned vehicles, and a variety of sensors and weapon systems. These advanced technologies will enhance the Navy’s offensive and defensive ASW capabilities.

The Littoral Combat Ship (LCS) is a shallow-draft, fast and maneuverable warship that has been specially designed and equipped for operations in the littoral environment. The LCS utilizes integrated state of the art ASW systems and accommodates two MH-60R/S helicopters. Sikorsky's MH-60S variant can be fitted with sensors that are optimized for countermine warfare while the MH-60R variant can be optimized to locate, track, and attack enemy submarines.

The Navy desires an increase in ASW capabilities in future unmanned underwater vehicles (UUVs). In 2003, UUVs were successfully deployed to search for mines and obstacles in the port of Umm Qasr on the Al Faw peninsula and up the Tigris-Euphrates River in order to clear the waterways for Allied shipping.[27] In addition to providing port and waterway clearance, UUVs can provide persistent Intelligence, Surveillance, and Reconnaissance (ISR). Newer generation UUVs will augment current ASW capabilities.

U.S. submarines will continue to play a vital role in the accomplishment of our strategic objectives that support the United States' National and Military Strategies. Admiral Mullen declared, "Our submarines are on the job in this war and being used in ways that we could have never imagined just a few years ago. They are constantly adapting their stealth capabilities to help find and fix terrorists' locations and intentions. They are using that same stealth advantage to help take down smugglers and pirates."[28]

A lethal and stealthy submarine force is central to the Navy's ASW capabilities. The new Virginia class nuclear powered attack submarine (SSN) is an advanced multi-mission submarine that can conduct deep water ASW and operate in the littorals. The Virginias' sonar suite is comprised of active and passive bow-mounted arrays, a wide aperture passive array on the flank, a high frequency active array on the keel and fins, and a dual towed array.

The sonar processors are more capable than the Los Angeles class submarines' processors and the Virginia class also employs advanced weapon systems, countermeasures, and propulsion systems.

The P-3 Orion has long been a vital component of the U.S. Navy's ASW doctrine. The P-3 is a multi-engine, long-range ASW aircraft capable of finding, localizing, tracking, and attacking submarines. The P-3 will be replaced by the P-8 Multi-Mission Maritime Aircraft (MMA). The new MMA will be highly reliable and equipped with state-of-the-art, improved maritime surveillance sensors and next generation weapon capabilities. The MMA will help ensure the Navy's future dominance in long-range maritime patrol. Additionally, the MMA will be equipped to perform anti-surface warfare (ASuW), and ISR. Therefore, the MMA will be a long-range ASW, ASuW, and ISR capable aircraft, able to conduct broad area, maritime and littoral operations.[29]

RECOMMENDATIONS

The CNO has mandated that the Navy posses the ability to aggregate, or consolidate its forces together quickly in order to meet rapidly developing threats or challenges. Subsequently, the Navy must also be able to disaggregate, or disperse those forces in order to respond to a multitude of potential threats. Therefore, the United States needs a naval force that is extremely lethal yet inherently flexible enough to respond to a variety of missions and tasks. The standing requirement for naval forces to be able to aggregate and disaggregate quickly presents unique challenges to the traditional ASW concept of defense in depth for a carrier.

With the ever increasing technological advances in early warning radars and point defense systems, enemy anti-ship cruise missiles are now easier to detect and destroy. U.S.

naval surface combatants, operating independently, can now defend themselves against a multitude of surface and airborne threats. Sophisticated targeting and tracking radars can provide fire control solutions to onboard advanced anti-ship or anti-aircraft missiles. The targeting solutions can also be relayed to stand-off aircraft, equipped to conduct attacks if necessary. Therefore, even when U.S. naval forces operate independently, they can still provide a robust self defense against surface and airborne threats.

The true challenge associated with disaggregating a CSG or ESG is being able to maintain a robust ASW defense for the carrier, or HVU. A carrier or HVU operating independently will now incur an additional amount of risk associated with the lack of a coherent, layered, ASW defense in depth. Once the naval forces are aggregated, a traditional ASW defense can be employed. These challenges highlight the importance of maintaining well equipped, well trained, and highly capable ASW crews and platforms.

CONCLUSION

Acquiring newer technologies and systems will help ensure that the Navy maintains ASW dominance in the littorals and choke points of the world for years to come. The Navy must carry on the quest for ASW superiority to guarantee that the United States can continue to project joint warfighting power anywhere in the world. The United States requires access to the oceans, seas, straits, and waterways of the world so that overall strategic objectives can be achieved. In a statement describing the importance of sea power, Admiral Mullen explained that, "[The Navy]…had proven the awesome capability of the sea when used for war. But…[it had]…yet to realize the full potential of the sea when leveraged for peace, prosperity, increased understanding, transparency and pervasive security…[To] me…[that] is

the real meaning, the real potential of sea power. It is the power of the sea to share and unite, to deter and defeat, to protect and to endure."[30]

Carrier Strike Groups (CSGs) and Expeditionary Strike Groups (ESGs) are not only critical enablers of joint power projection ashore, but they are enablers for the policy makers who strive to achieve the nation's strategic objectives. CSGs and ESGs will continue to require a robust, technologically advanced, well trained, and integrated ASW capability for survivability. The concept of ASW defense in depth has enabled our strike groups to enjoy unfettered freedom of access to the seas over the years. If the United States intends to enjoy this freedom in the future, then Anti-Submarine Warfare must be a critical part of our new Maritime Strategy.

Admiral Mullen believes, "…the greatest strength of naval forces is the inherent flexibility they provide policy makers. Like positive influence, flexibility can help bring certainty to an uncertain world."[31] The Navy and Marine Corps team, a dominant, well trained, combat-proven, and lethal force to be reckoned with, provides that flexibility. An essential component of this dynamic team is the Navy's ASW capabilities. At the core of the Navy's mission is the ability to project military presence from the seas. In order to support the joint forces through the full range of combat operations, the Navy must be able to deliver those fighting forces ashore from anywhere, while simultaneously ensuring that the United States and its allies continue to enjoy access to the waters of the world in an environment that is free from conflict.

There are critics who argue that the U.S. Navy should not spend scarce resource dollars on relatively expensive new ASW technologies and systems. Although critics argue

that those dollars should be spent elsewhere, such as in direct support of the Global War On Terrorism, their outlook is short-sited and misguided.

To achieve National Security Strategy goals, the President declared that the United States would "work to prevent attacks against us and our friends", "diffuse regional conflicts", and "prevent our enemies from threatening us, our allies, and our friends with weapons of mass destruction".[32] The U.S. Navy, with a robust ASW capability, has directly supported these challenges.

The National Military Strategy has three objectives: "protect the United States against attacks and aggression", "prevent conflict and surprise attack", and "prevail against adversaries".[33] In order to achieve these objectives, the U.S. Navy must be ready and able to accomplish a wide variety of missions that fall under the umbrella of maritime dominance. The U.S. Navy's Anti-Submarine Warfare abilities are at the very core of this capability.

The United States cannot afford to let the Navy's ASW capabilities, technologies, tactics or training atrophy. The Navy must stay the course and continue to develop newer weapon systems, sensors, and platforms while simultaneously maintaining proficiency in localization, tracking, and attack procedures. Lest we forget the importance that ASW has played in the past, the Navy must continue to ensure that the United States has the future capability to deter any threat, destroy any enemy, provide for global freedom of access to the world's oceans, and maintain the ability to deploy joint fighting forces to anywhere in the world - from anywhere in the world.

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NOTES

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